

WHAT IS CLAIMED IS:

1. A method for managing call information associated with a plurality of mobile stations by a plurality of base station controllers in a wireless mobile telecommunications system including the base station controllers each adapted to provide packet data services to the mobile stations and provided with a packet data processor, each of the packet data services being performed between the base station controllers and the mobile stations via the packet data processor of an associated one of the base station controllers and a packet network connected to the packet data processor, comprising the steps of:

storing , in a source base station controller, call information created for the packet data service in a dormant state database, upon receipt of a call request message from a given one of the mobile stations;

transmitting an identifier of the given mobile station and an identifier of the source base station controller from the source base station controller to other base station controllers, if the given mobile station makes a transition to a dormant state ; and

storing, in the other base station controllers, the identifier of the given mobile station and the identifier of the source base station controller from the source base station controller in a pointer lookup table.

2. The method according to claim 1, further comprising the steps of:

checking ,in a target base station controller, the identifier of the source base station controller stored in association with the identifier of the given mobile station from the pointer lookup table upon receipt of the call request message from the given mobile station in the dormant state;

sending a call information request for the given mobile station from the

target base station controller to the source base station controller based on the checked identifier of the source base station controller;

sending the call information stored in association with the given mobile station from the source base station controller to the target base station controller upon receipt of the call information request; and

connecting the packet network to the packet data processor associated with the target base station controller using the call information ,in the target base station, and thus reconnecting the packet data service to the given mobile station upon receipt of the call information from the source base station.

3. The method according to claim 1, further comprising the steps of:

identifying in the source base station controller, one of the base station controllers where a specific mobile station is located, based on the call information stored in the dormant state database in association with the specific mobile station upon receipt of a request for termination of packet data to the specific one of the mobile stations from the packet network through the packet data processor associated with the source base station controller;

requesting the identified base station controller to page the specific mobile station;

paging the specific mobile station , in the identified base station controller upon receipt of the paging request, and sending a call information request associated with the specific mobile station to the source base station controller when the specific mobile station responds to the paging;

sending ,in the source base station controller, the call information stored in the dormant state database in association with the given mobile station to the identified base station controller upon receipt of the call information request; and

connecting the packet network to the packet data processor using the

received call information by the identified base station controller and thus reconnecting the packet data service to the given mobile station upon receipt of the call information from the source base station.

4. The method according to claim 1, further comprising the steps of:

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checking ,in a target base station controller, the identifier of the source base station controller stored along with the identifier of the given mobile station upon receipts of a registration message from the given mobile station maintained in the dormant state

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requesting ,in the target base station controller, the source base station controller to update location information of the given mobile station, based on the checked identifier of the source base station controller; and

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updating ,in the source base station controller, location information of the call information stored in the dormant state database in association with the given mobile station, based on location information from the target base station controller.

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5. The method according to claim 1, wherein the call information contains the identifier of the mobile station, an air termination processor identifier, location information of the mobile station, a point-to-point protocol address, a point-to-point identifier, and a service option.

6. The method according to claim 2, wherein the target base station controller provides the identifier of the given mobile station when requesting the call information associated with the given mobile station from the source base

station controller.

7. The method according to claim 4, wherein the location information of the mobile station is an identifier of the target base station controller.

8. A method for managing call information associated with a plurality of mobile stations by a plurality of base station controllers in a wireless mobile telecommunications system including the base station controllers each adapted to provide packet data services for the mobile stations and provided with a packet data processor, each of the packet data services being performed between the base station controllers and the mobile stations via the packet data processor of an associated one of the base station controllers and a packet network connected to the packet data processor, comprising the steps of:

storing ,in the source base station controller, call information created for the packet data service in a dormant state database upon receipt of a call request message from a given one of the mobile stations;

determining , in the source base station controller, a pointer lookup base station controller from among the base station controllers to execute a hash function based on an identifier of the given mobile station, if the given one of the mobile station makes a transition to a dormant state.

transmitting ,in the source base station controller, the identifier of the given mobile station and an identifier of the source base station controller to the pointer lookup base station controller; and

storing ,in the pointer lookup base station controller, the identifier of the given mobile station and the identifier of the source base station controller, received

from the source base station controller, in a pointer lookup table.

9. The method according to claim 8, further comprising the steps of:

determining ,in the target base station, a pointer lookup base station controller from among the other base station controller to execute a hash function
5 based on an identifier of the given mobile station;

inquiring ,in the target base station controller, to the pointer lookup base station controller about the source base station controller associated with the given mobile station;

10 transmitting ,in the pointer lookup base station controller, the identifier of the source base station controller stored in the pointer lookup table in association with the identifier of the given mobile station;

15 requesting ,in the target base station controller, call information associated with the given mobile station, from the source base station controller, based on the identifier of the source base station controller;

20 transmitting ,in the source base station controller, the call information stored in the dormant state database in association with the given mobile station upon receipts of the call information request; and

25 connecting ,in the target base station controller, the packet data processor thereof to the packet network, based on the call information from the source base station controller, thereby resuming the packet data service suspended in association with the given mobile station.

10. The method according to claim 8, further comprising the steps of:

determining ,in the target base station, a pointer lookup base station controller from among the other base station controller to execute a hash function based on an identifier of the given mobile station in the dormant state;

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inquiring ,in the target base station, to the pointer lookup base station controller about the source base station controller associated with the given mobile station

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transmitting ,in the pointer lookup base station controller, to the target base station controller the identifier of the source base station controller stored in the pointer lookup table in association with the identifier of the given mobile station upon receipts of the identification request;

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requesting ,in the target base station controller, to the source base station controller to update location information of the given mobile station, based on the source base station controller identifier from the pointer lookup base station controller; and

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updating ,in the source base station controller, the location information of the call information stored in the dormant state database in association with the given mobile station, based on location information from the target base station controller.

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11. The method according to claim 8, wherein the call information contains the identifier of the mobile station, an air termination processor identifier, location information of the mobile station, a point-to-point protocol address, a point-

to-point identifier, and a service option.

12. The method according to claim 9, wherein the target base station controller provides the identifier of the given mobile station upon requesting the call information associated with the given mobile station from the source base station controller.

13. The method according to claim 10, wherein the location information of the mobile station is an identifier of the target base station controller.

14. The method according to claim 9, further comprising the step of:
storing ,in the target base station controller, the identifier of the given mobile station and the source base station controller identifier from the pointer lookup base station controller in a cache internally provided in the target base station controller.

15. The method according to claim 14, wherein when the identifier of the given mobile station has been stored in the cache, the target base station controller then requests the call information, associated with the given mobile station, from the source base station controller, based on the identifier of the source base station controller stored in the cache, without inquiring of the pointer lookup base station controller about the source base station controller.

16. The method according to claim 11, further comprising the step of:
storing ,in the target base station controller, the identifier of the given mobile station and the source base station controller identifier from the pointer lookup base station controller in a cache internally provided in the target base

station controller.

17. The method according to claim 16, wherein when the identifier of the given mobile station has been stored in the cache, the target base station controller then requests the call information, associated with the given mobile station, from the source base station controller, based on the identifier of the source base station controller stored in the cache, without inquiring of the pointer lookup base station controller about the source base station controller.

18. The method according to claim 15, wherein:

when the identifier of the given mobile station has been stored in neither the pointer lookup table nor the cache, the target base station controller then inquires of the plurality of the base station controllers about the source base station controller associated with the identifier of the given mobile station; and

in response to the identification request, the source base station controller informs the target base station controller of the identifier thereof.

19. The method according to claim 8, further comprising the steps of:

upon receipt of a request for termination of packet data to a specific one of the mobile stations from the packet network through the packet data processor associated with the source base station controller, identifying by the source base station controller one of the base station controllers where the specific mobile station is located, based on call information stored in the dormant state database in association with the specific mobile station;

requesting the identified base station controller to page the specific mobile station;

upon receipt of the paging request, paging the specific mobile station by the

identified base station controller, and sending a call information request associated with the specific mobile station to the source base station controller when the specific mobile station responds to the paging;

upon receipt of the call information request, sending by the source base station controller the call information stored in the dormant state database in association with the given mobile station to the identified base station controller; and

upon receipt of the call information from the source base station, connecting the packet network to the packet data processor using the received call information by the identified base station controller and thus reconnecting the packet data service to the given mobile station.

20. An apparatus for managing call information associated with a plurality of mobile stations by a plurality of base station controllers in a wireless mobile telecommunications system including the base station controllers each adapted to provide packet data services for the mobile stations and provided with a packet data processor, each of the packet data services being performed between the base station controllers and the mobile stations via the packet data processor of an associated one of the base station controllers and a packet network connected to the packet data processor, comprising:

a source base station controller corresponding to one of the base station controllers, the source base station controller serving to store, in a dormant state database, call information produced for the packet data service associated with the source base station controller in response to a call request message from a given one of the mobile stations, while sending an identifier of the given mobile station and an identifier of the source base station controller to the other base station controllers; and

the other base station controllers each storing the identifier of the given

mobile station and the identifier of the source base station controller in a pointer lookup table.

21. The apparatus according to claim 20, further comprising:

a target base station controller corresponding to one of the other base station
 5 controllers, the target base station controller receiving the call request message from
 the given mobile station maintained in the dormant state, searching, in response to
 the call request message, a pointer lookup table for the identifier of the source base
 station controller stored in association with the identifier of the given mobile station,
 receiving call information, associated with the given mobile station, from the source
 10 base station controller based on the identifier of the source base station controller,
 and connecting the packet data processor of the target base station controller to the
 packet network based on the call information, thereby resuming the packet data
 service suspended in association with the given mobile station.

22. The apparatus according to claim 20, further comprising:

a target base station controller corresponding to one of the other base station
 15 controllers, the target base station controller receiving a registration message from
 the given mobile station maintained in the dormant state, searching, in response to
 the registration message, a pointer lookup table for the identifier of the source base
 station controller stored in association with the identifier of the given mobile station,
 20 and requesting the source base station controller to update location information of
 the given mobile station, based on the identifier of the source base station controller.

23. The apparatus according to claim 20, wherein the call information
 contains the identifier of the given mobile station, an air termination processor
 identifier, location information of the given mobile station, a point-to-point protocol

address, an identifier of the point-to-point protocol , and a service option.

24. The apparatus according to claim 21, wherein the call request message contains the identifier of the given mobile station.

25. The apparatus according to claim 22, wherein the location
5 information of the given mobile station is an identifier of the target base station controller.

26. An apparatus for managing call information associated with a plurality of mobile stations by a plurality of base station controllers in a wireless mobile telecommunications system including the base station controllers each
10 adapted to provide packet data services for the mobile stations and provided with a packet data processor, each of the packet data services being performed between the base station controllers and the mobile stations via the packet data processor of an associated one of the base station controllers and a packet network connected to the packet data processor, comprising:

15 a source base station controller for storing, in a dormant state database, call information produced for the packet data service associated with the source base station controller in response to a call request message from a given one of the mobile stations, executing a hash function based on an identifier of the given mobile station to determine a pointer lookup base station controller, receiving and sending,
20 to the determined pointer lookup base station controller, an identifier thereof along with the identifier of the given mobile station, the pointer lookup base station controller for storing the identifier of the given mobile station and the identifier of the source base station controller, received from the source base station controller, in a pointer lookup table.

27. The apparatus according to claim 26, further comprising:

a target base station controller for receiving the call request message from the given mobile station maintained in the dormant state, executing, in response to the call request message, a hash function based on an identifier of the given mobile station to determine the pointer lookup base station controller, receiving from the determined pointer lookup base station controller the identifier of the source base station controller stored in association with the identifier of the given mobile station, receiving from the source base station controller the call information associated with the given mobile station, based on the identifier of the source base station controller, and connecting an internal packet data processor thereof to the packet network based on the call information, thereby resuming the packet data service suspended in association with the given mobile station.

28. The apparatus according to claim 26, further comprising:

a target base station controller for receiving a registration message from the given mobile station maintained in the dormant state, executing, in response to the registration message, a hash function based on an identifier of the given mobile station to determine the pointer lookup base station controller, receiving from the determined pointer lookup base station controller the identifier of the source base station controller stored in association with the identifier of the given mobile station, and requesting the source base station controller to update location information of the given mobile station, based on the identifier of the source base station controller.

29. The apparatus according to claim 26, wherein the call information contains the identifier of the given mobile station, an air termination processor identifier, location information of the given mobile station, a point-to-point protocol

address, an identifier of the point-to-point protocol , and a service option.

30. The apparatus according to claim 27, wherein the call request message contains the identifier of the given mobile station.

31. The apparatus according to claim 28, wherein the location
5 information of the mobile station is an identifier of the target base station controller.

32. The method according to claim 17, wherein:

when the identifier of the given mobile station has been stored in neither the pointer lookup table nor the cache, the target base station controller then inquires
10 of the plurality of the base station controllers about the source base station controller associated with the identifier of the given mobile station; and

in response to the identification request, the source base station controller informs the target base station controller of the identifier thereof.